

for a period of years in order to bring about any harmful result. Danger from a lack of this dietary factor need not be apprehended if the diet is otherwise complete.

The development of rickets has been attributed by Mellanby, as a result of experiments on dogs, to a lack of fat-soluble vitamine, and Hopkins and Chick have termed this vitamine the "anti-rachitic factor." It was found, however, that infants fed on this "fat-soluble vitamine minimal diet" did not develop the well-established signs of rickets—beading of the ribs, enlargement of the epiphyses, weakness of the muscles, etc. We cannot believe, therefore, that rickets is brought about by a deficiency of this principle; all the more so, as this disorder developed in infants receiving large quantities of milk containing ample fat-soluble vitamine. It may be added that neither cream nor the leafy vegetables, both of which are rich in this principle, were found to be comparable to cod liver oil as growth stimulants.

29 (1489)

A method for the determination of calcium, magnesium, potassium, sodium, chlorides and "acid-soluble" sulfur and phosphorus in one sample (25 c.c.) of blood.

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The blood is laked with eight volumes of water and the protein is then precipitated by the addition of one volume of 1:1 nitric acid. In a portion of the filtrate chlorides are determined gravimetrically by precipitation with silver nitrate and filtering on a Gooch crucible. The excess of silver in the filtrate is removed with hydrochloric acid and the resultant filtrate and the remainder of the blood filtrate are combined and treated with copper nitrate and perchloric acid, evaporated to dryness and then to blackness.¹ The residue is treated with concentrated hydrochloric acid, again evaporated to dryness and then dissolved in dilute hydrochloric

¹ Redness must be avoided, or potassium will be lost. This is a modification of Benedict's method (*Journal of Biological Chemistry*, 6, 363, 1909).

acid. Sulfates are precipitated with barium chloride and the filtrate is made ammoniacal, then acid with acetic acid and phosphates are precipitated with ferric chloride. The precipitate is dissolved in nitric acid and the phosphoric acid is precipitated with ammonium molybdate and the yellow precipitate is titrated. The filtrate from the ferric acetate precipitate is treated with sulphuric acid to remove the barium and with hydrogen sulfide to remove the copper and the filtrate is evaporated to small volume. Calcium is precipitated in a centrifuge tube as oxalate, washed and titrated. The supernatant liquid and washings are evaporated, heated to remove ammonium salts and the magnesium is precipitated in a centrifuge tube as magnesium ammonium arsenate. This is washed and then dried, *in vacuo*, over sulfuric acid. It is dissolved in acid, transferred to a distillation flask and the ammonia determined by distillation and Nesslerization. The supernatant liquid and washings are treated with hydrochloric and hydrobromic acids, evaporated to dryness, freed of ammonium salts and arsenic, sulfuric acid is added and the potassium and sodium are weighed as mixed sulfates in a platinum dish. Potassium is then precipitated as the cobaltinitrite and weighed.¹

30 (1490)

A benign tumor in *Drosophila*.

By MARY B. STARK. (by invitation).

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In a strain of flies with a lethal tumor, *i.e.*, a tumor occurring in one half of the males and causing their death, another tumor has appeared as a mutation. The new tumor differs from the lethal one in that it is not sex-linked, *i.e.*, it appears in females as well as males, and further in that it does not cause the death of the flies in which it occurs. Linkage experiments show that one at least of the genes essentially for tumor development is in the third chromosome closely linked to *dichaete*.

¹ Garola and Braun, *Annales de falsifications*, 10, 572, 1917.